

CHAPTER 13 - Pipe, Pipe-Arch, Structural Plate Pipe, and Structural Pipe Arch-02610S**General:**

The life of a roadway depends largely upon proper drainage. Pipes are a key component of the drainage systems built on a project. It is necessary to inspect the drainage facilities to ensure proper sizing and quality of construction.

Certification required for delivery of pipe to the project site is a manufacturer's certification of compliance with original signatures, HDPE pipe needs to have a NTPEP (National Transportation Product Evaluation Program) enrollment certification from the supplier, and if the pipe is coated a certification of compliance certifying the coating thickness. Refer to Section 02610S and the Minimum Sampling and Testing Guide for detailed guidance on materials certification. Do not accept any damaged pipe.

Proper placement of the pipe is critical to the drainage system operating correctly. The inspector must understand the information on the offset survey stakes and check for proper placement of drainage items. Be sure the system will drain the intended area. As excavation progresses, check line and grade. Bedding material and placement shall be accepted in accordance with requirements shown in the Standard Drawings DG 5 & 6. Placed bedding material should be smooth and free of protruding rocks and conform to the surveyed grade. If excavation violates OSHA safety standards by not using a trench box or shoring, notify the Contractor and report the condition to the Senior Inspector or the Resident Engineer. The bottom of the pipe should be completely supported by the bedding material. If bell and spigot or coupling joints are used, there should be an adequate excavation to receive the joint. Laying the pipe shall begin at the downstream end of the culvert with the groove ends facing upstream, place bell or socket end facing upstream. The flow line of the pipe shall be placed at the surveyed line and grade. Close the joints in accordance with manufacturer's recommendations.

Backfill shall consist of granular or other fine, readily compactable material that shall not contain rock larger than 2 inches in size, nor frozen lumps, clay, or other objectionable material. Refer to the standard drawing DG 5. The material shall be properly moistened and compacted in successive 6 inch lifts of pre-compacted materials by means of a mechanical tamping device approved by the Resident Engineer. The material shall be compacted to the required density. Excessive water in the material or jetting will not be permitted. The backfilling operation shall proceed upward simultaneously on each side of the pipe. The

material under the haunches of the pipe shall be thoroughly compacted, being careful not to float the pipe. When the top of the pipe is exposed above the top of the trench, embankment material shall be placed and compacted by mechanical tamping as above for a width on each side of the pipe equal to at least twice the horizontal inside diameter of the pipe or 3 feet whichever is less. The embankment material within this distance and 1 foot over the top shall be of the same material as specified above for trench backfill. The remainder of the adjacent side fill may be regular embankment material and can be compacted with power equipment as long as is can be done with no damage to the pipe. The adjacent side fill shall be placed and compacted to a minimum width of two diameters of the pipe or 12 ft, whichever is less, prior to use by traffic or construction equipment.

Refer to Section 1.6 of 02610S for acceptance criteria once pipe has been placed.

Related Sections:

00820: Legal Relations and Responsibility to Public

02317: Structural Excavation

02330: Embankment

03055: Portland Cement Concrete

03310: Structural Concrete

I. Definitions

Pipe and Pipe Arch are identified according to diameter or by span and rise. Corrosion Classes are defined as follows:

1. Class A: Pipe used in mostly non-reactive soils, which require no special materials, treatments, or coatings.
2. Class B: Pipe used in moderately reactive and corrosive soils.
3. Class C: Pipe used in soils which are highly reactive and corrosive.
4. Class D: Untreated structural plate pipe used in mostly non-reactive and non-corrosive soils.
5. Class E: Structural plate pipe used in highly reactive and corrosive soils.

See Section 1.4 of 0210S for additional definitions.

Pipe, Pipe-Arch, Structural Plate Pipe, and Structural Pipe Arch

SPEC	INSPECTION LEVEL	INSPECTION OBJECTIVE	INSPECTOR ACTIVITY
02610S	Important	Ensure all manufactured materials are certified as per UDOT standards.	Procure and file all required certificates of compliance.
	Intermittent	Ensure pipe and other components are placed in correct locations.	Check placement locations against survey stake information and document results.
	Intermittent	Ensure excavation and bedding are executed properly and according to standards.	Document all activities in daily diary or electronic field book.
	Intermittent	Ensure bedding and backfill are compacted to 96% maximum laboratory density and placed in 6 in lifts.	Document equipment and manpower utilized. Document density results with random locations.
	Important	Determine pay quantities.	Measure and document length of pipe placed and placed quantity of related items.
	Intermittent	Ensure conditions of Section 1.6 of 02610S are met.	Document as per specifications.

PIPE, PIPE-ARCH, STRUCTURAL - Check List

Confirming	Attributes
YES () NO () N/A ()	Reviewed assigned functions and then reviewed the contract plans, specifications, and special provisions, noting all provisions applicable to the assigned responsibilities.
YES () NO () N/A ()	Review Survey Stakes for Elevation and alignment of pipe.
YES () NO () N/A ()	Ensure base for pipe is solid and well graded and compacted.
YES () NO () N/A ()	The inspector before placement has received Manufactures Certificate of Compliance for quantity to be placed.
YES () NO () N/A ()	While digging trench for pipe, Safety has been provided with safety slope or Trench box
YES () NO () N/A ()	When placement of pipe with a bell. Bell holes have been dug, so that pipe is not resting on the bell of pipe.
YES () NO () N/A ()	Material is placed and compacted around haunches of pipe before backfilling begins. With proper thickness of each lift and optimum moisture in material.
YES () NO () N/A ()	Completion of Daily Diary and completion of Measurement for field book or Ipaq. Complete with all pertinent information

Item #	PIPE CULVERT CLASS A			Verified By	Date	Eng't Party	Weather
	Date	Station	24 INCH Lin Ft.				
4/15/2006	15 + 50 Rt.	16 + 25 Rt.	75 lin. Ft.	RLJ			

Clean-out- box # 18

16 + 25

Clean - out- box # 19

15 + 55

75 lin ft

NOTE:
Measurement are taken from outside of box.

NOTES:

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NOTES:

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